

Update on NASA's Cooperation with Non-Traditional Partners

Michael O'Brien

**Assistant Administrator for
External Relations**

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Agenda

- **Overview of International Cooperation at NASA**
- **Guidelines for International Cooperation**
- **Non-Traditional Partner Approach**
- **Cooperation with Muslim Majority Countries**
- **Examples: Potential Cooperation with Non-Traditional Partners**
- **Challenges and Issues**
- **Next Steps and Summary**



International Cooperation: Overview

- **International cooperation at NASA:**

- Is directed by the National Aeronautics and Space Act that created NASA in 1958 and continues to be part of national space policy
- Has been a cornerstone of NASA's activities throughout its history
- Includes over 3,000 agreements with over 100 nations
- Brings multiple benefits to NASA and its partners
- Is developed through a combination of choice and necessity

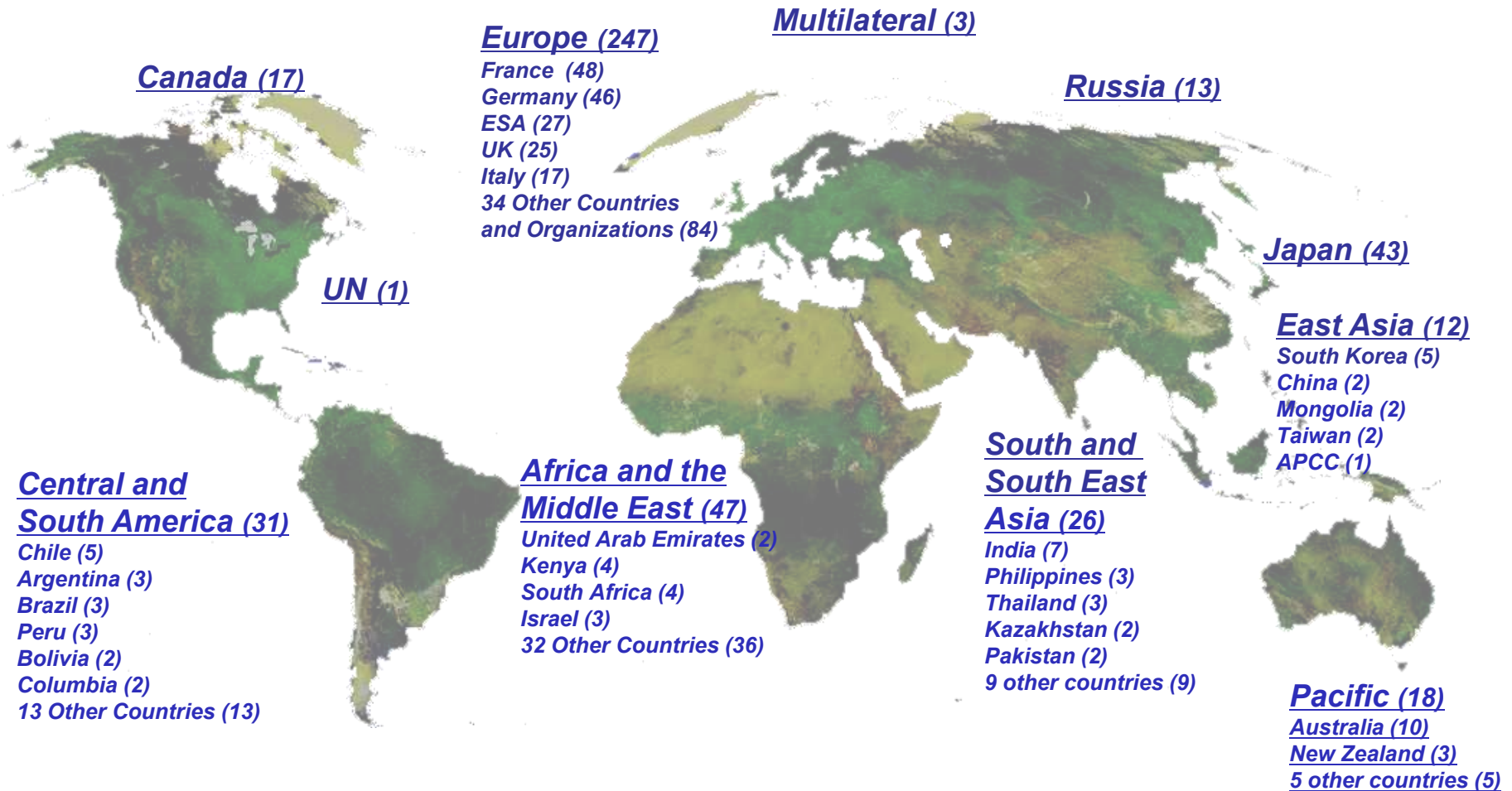
- **Current international cooperation:**

- 458 active international agreements with 118 countries
- By mission area: 2/3 of all agreements are in the NASA science missions
- By region: 1/2 of all agreements are with partners in Europe
- 8 partners account for 50% of the agreements (France, Germany, ESA, Japan, UK, Italy, Canada, Russia)
- The other 50% are spread among 108 other countries, many of which we are calling "Non-Traditional Partners"



Current International Cooperation

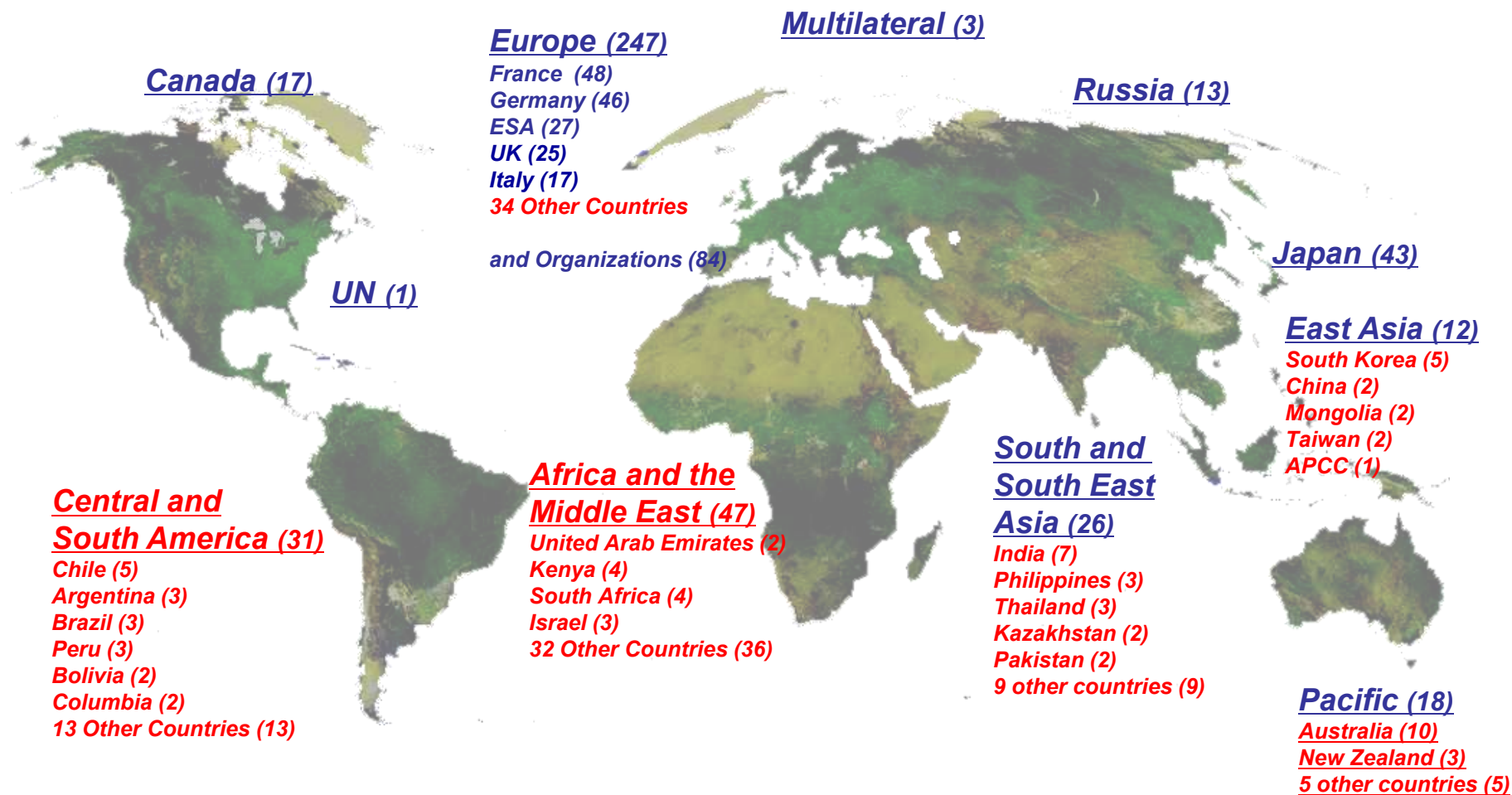
Total International Agreements = 458, Countries = 118





Current International Cooperation (non-traditional partners highlighted)

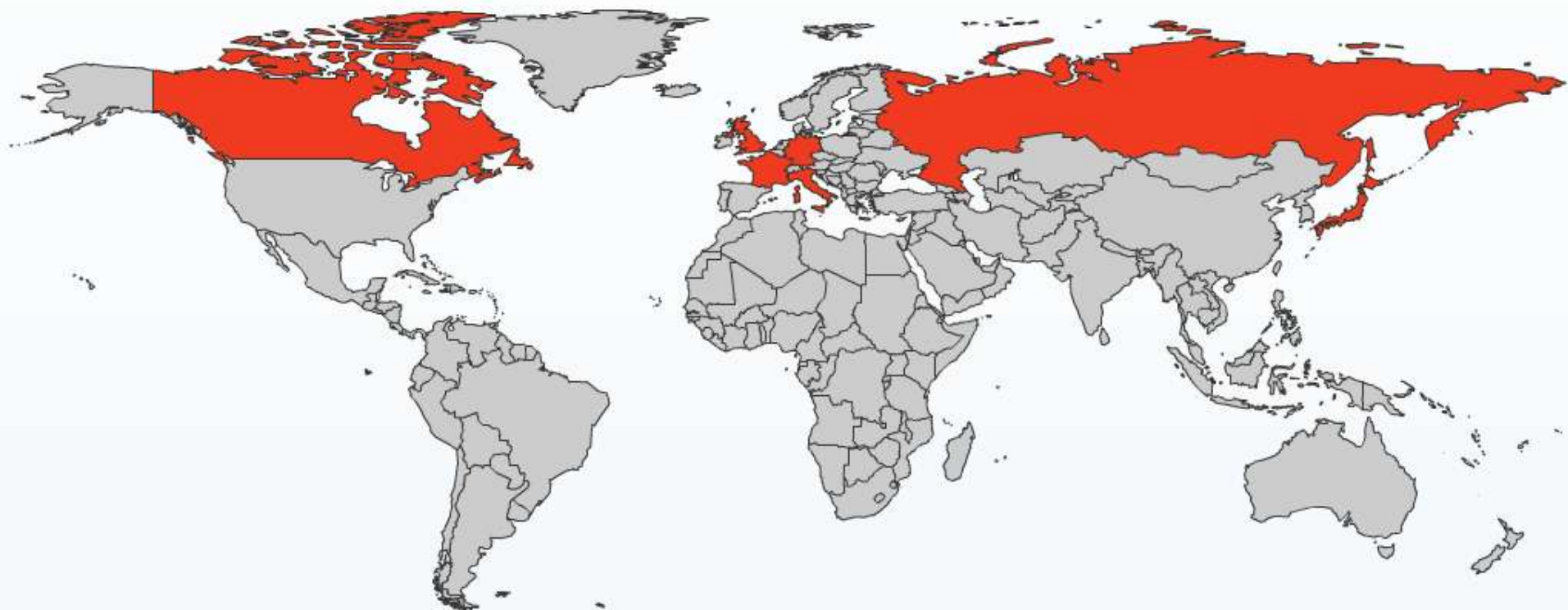
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RED = Agreements with Non-traditional Partner Countries

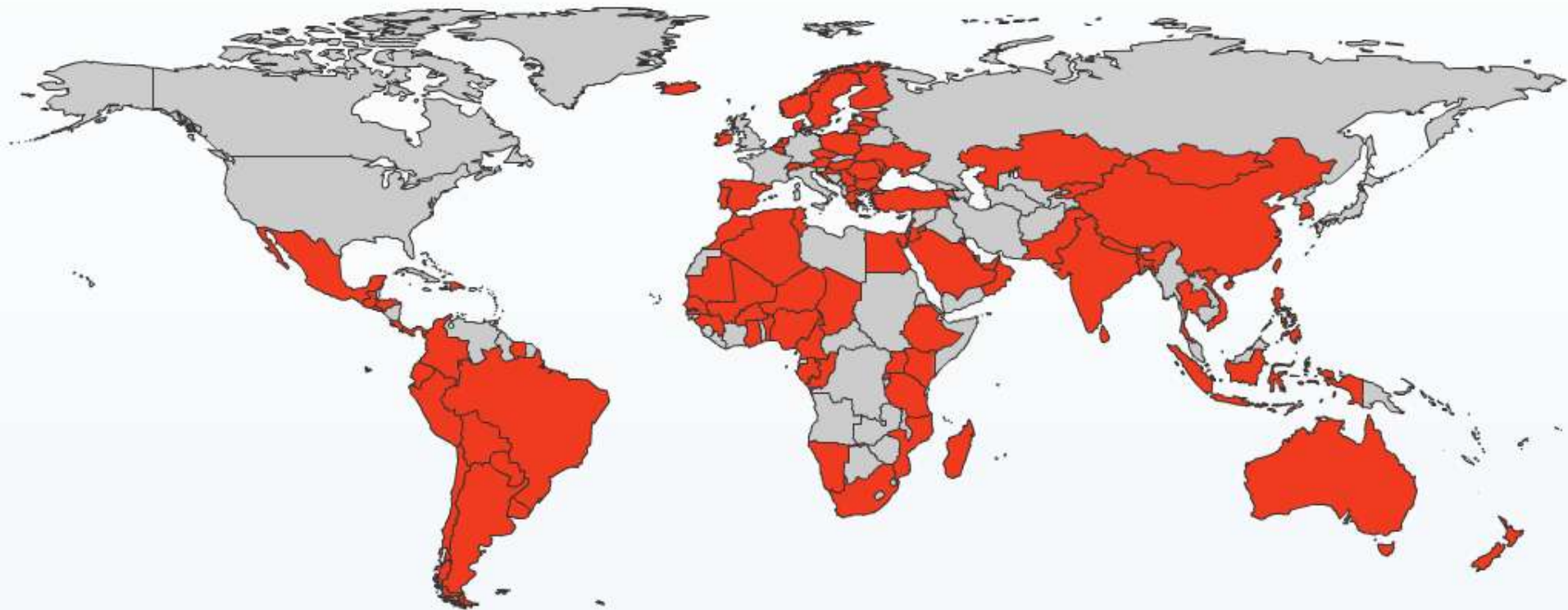


“Traditional” Partners





“Non-Traditional” Partners





Guidelines for International Cooperation

- **NASA international partners are generally government agencies**
- **Each Partner funds its respective contributions, but contributions need not be equivalent. “No exchange of funds”**
- **Cooperation must be consistent with U.S. foreign policy objectives**
- **Projects/Partnerships:**
 - Must have scientific and technical merit
 - Must demonstrate a specific benefit to NASA
 - Are structured to protect against unwarranted technology transfer
 - Are structured to establish clearly defined managerial and technical interfaces to minimize complexity
 - Are documented in a written, binding agreement, closely coordinated with the Department of State and other USG agencies



NASA Non-Traditional Partner Approach

- **Although broad international participation in NASA programs has been welcomed, partnerships with many nations have been limited by their interests, technical capacity and funding**
- **Efforts to engage non-traditional partners have been ongoing through NASA's Science Mission Directorate, primarily in Earth science applications, including education**
- **A focused effort is now underway to engage and increase NASA's cooperation with “non-traditional” partners**
 - Building on existing relationships
 - Establishing new relationships
 - Almost all countries and regions are of interest



NASA Non-Traditional Partner Approach

- **NASA's efforts are consistent with Administration interest to:**
 - Foster new S&T cooperation globally
 - Enhance S&T cooperation in Muslim majority nations
 - Emphasize STEM education initiatives
- **Initial NASA engagements have resulted in significant interest at the highest government levels**
 - Recent conference presentations and meetings in Abu Dhabi and Bangkok
 - Visits to UAE, Saudi Arabia, Oman, Thailand, Malaysia, Indonesia
- **All of NASA's engagements are conducted in close coordination with other USG agencies including State, USAID, OSTP and NSC**
- **Initial NASA focus is on opportunities that are:**
 - Mutually beneficial
 - Easy to implement at low cost
 - High impact in terms of results/societal benefits



Cooperation with Muslim Majority Nations

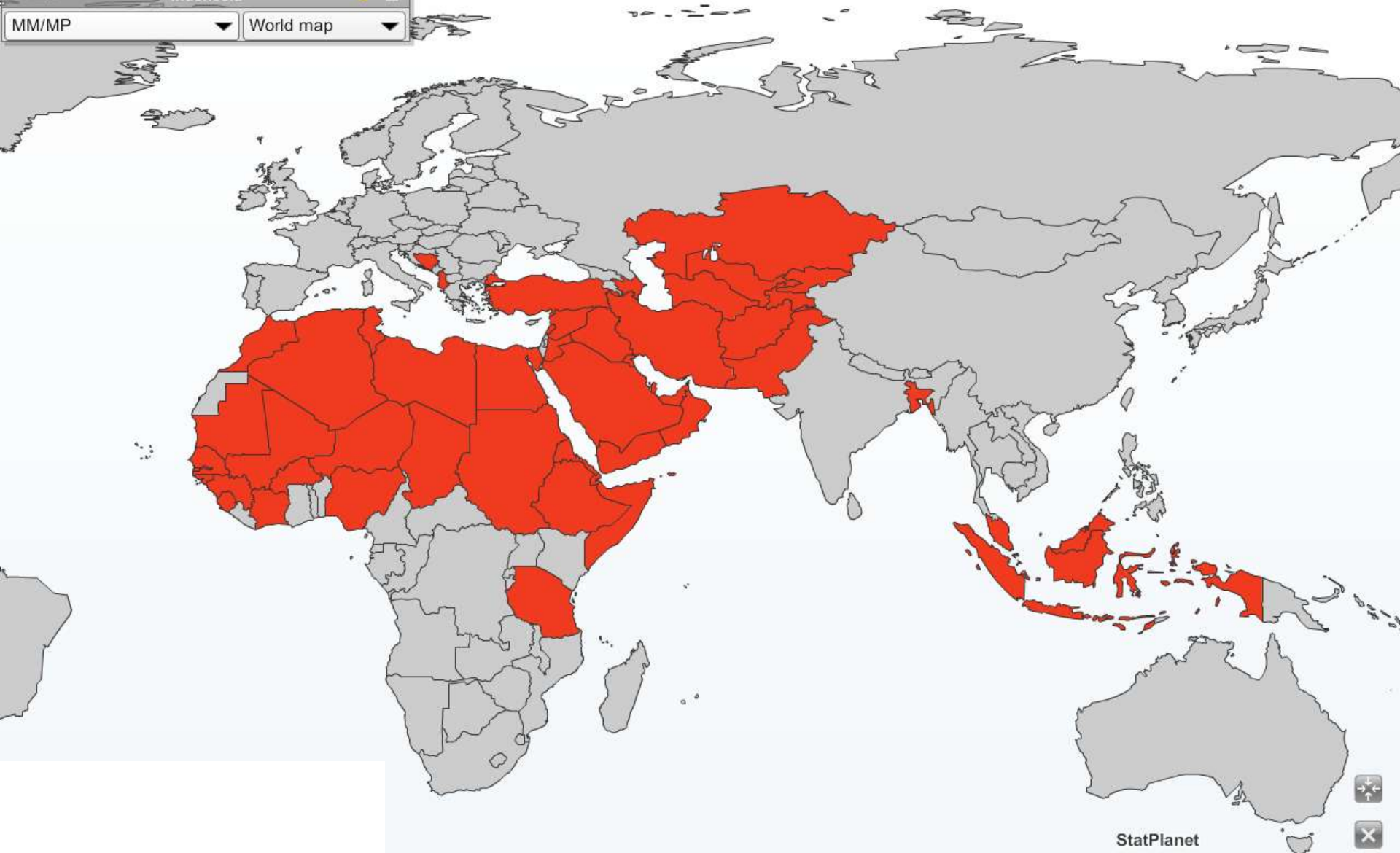
- **The Administration is seeking to enhance S&T cooperation with Muslim majority nations (Cairo speech, June 2009)**
 - Science Envoy program
 - Centers of scientific excellence
- **NASA's ongoing and planned activities support this initiative**
- **NASA currently has limited cooperation with about half of the Muslim majority nations**
- **In effort to identify potential new cooperation in the last 4 months NASA has engaged senior officials from:**
 - Saudi Arabia
 - Indonesia
 - Malaysia
 - Oman
 - UAE
 - Egypt



Muslim Majority Countries

Indonesia ★ □

MM/MP ▼ World map ▼

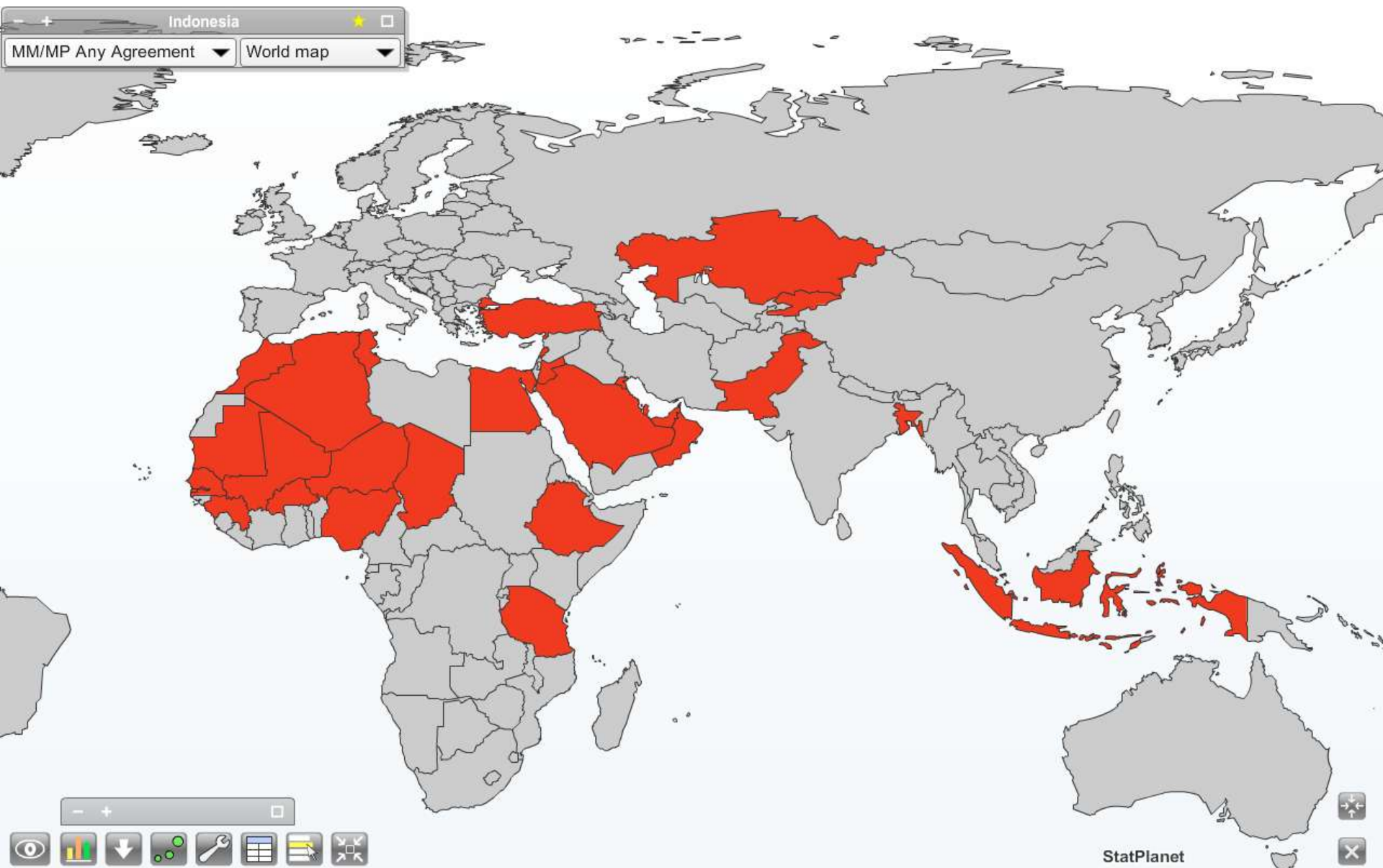


StatPlanet





Muslim Majority Countries with NASA Agreements





Examples of Potential Cooperation

- **Examples include scientific research, Earth science applications and education initiatives, but cooperation in all programmatic areas is welcome**
- **Existing cooperation includes:**
 - Global Learning and Observations to Benefit the Environment (111 countries)
 - AERONET, Aerosol Robotic Network (35 countries)
 - SERVIR (Central America, East Africa)
- **Other potential areas of cooperation include:**
 - Space Geodetic Network
 - ISS research
 - NASA Lunar Science Institute
 - Astrobiology and Terrestrial Analog Sites
 - Calibration and Validation Campaigns
 - Ground, Balloon and Sounding Rocket-Based “In-situ” Data



GLOBE

A global community of students, teachers, and scientists. Students actively take measurements that can then be shared with others around the world, using the internet to record the data.

Through classroom activities, fieldwork and international collaboration, students develop a better understanding of the Earth's environment on a local, regional, and global basis.

- ***Internet based***
- ***1 million students in 20,000 schools***
- ***111 countries***

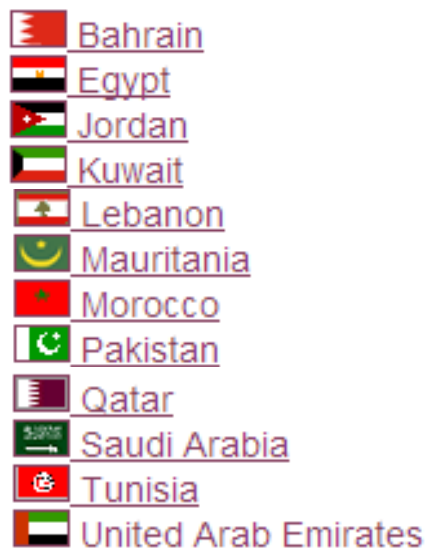




GLOBE Program



12 countries



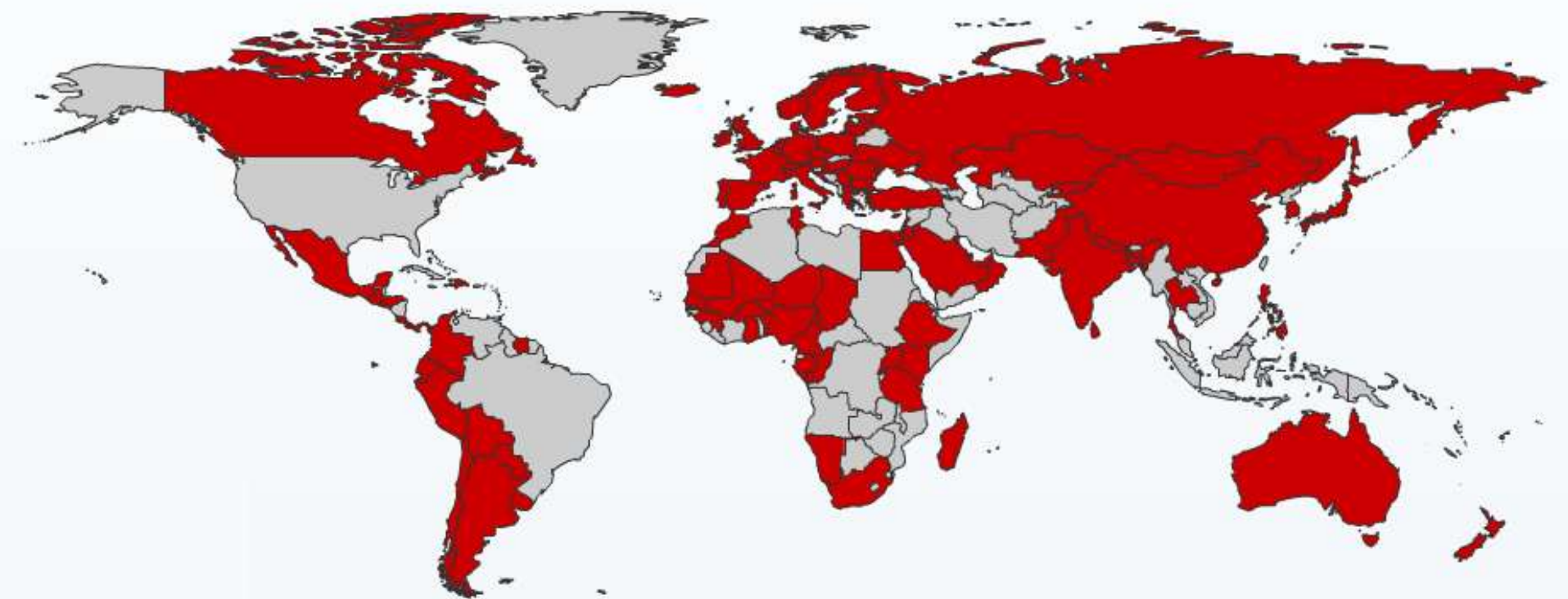
Near East and North Africa Regional Projects

- *Ocean for Life 2009* - Educational and cultural experience in U.S. national marine sanctuaries focusing on marine biology, oceanography, and the foundations of GLOBE student research.
- *Student seawater quality comparison study of the Arabian Gulf, the Red Sea and the Mediterranean Sea to determine the effects of sewage and industry on water quality (Bahrain, Jordan, Lebanon)*
- *Student comparison study on soil characteristics and land cover (Bahrain, Lebanon, Jordan, Qatar, Egypt)*



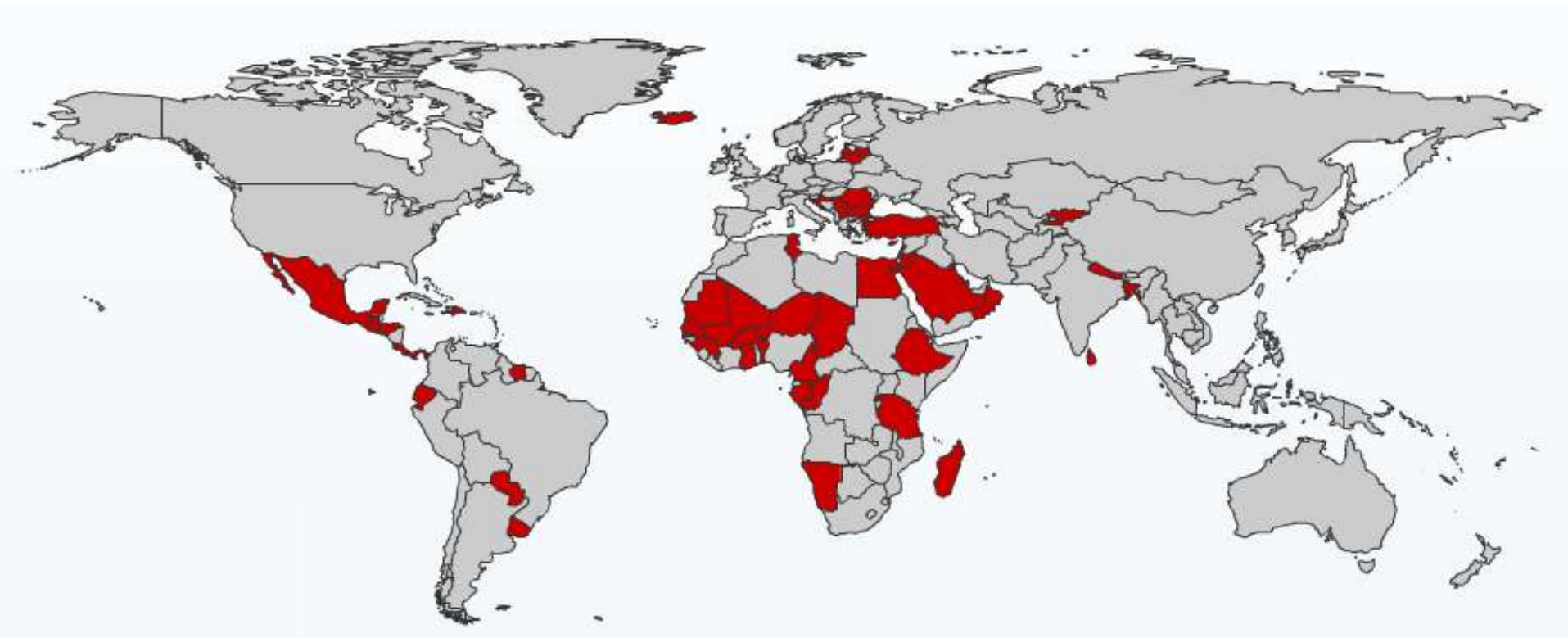


GLOBE agreements



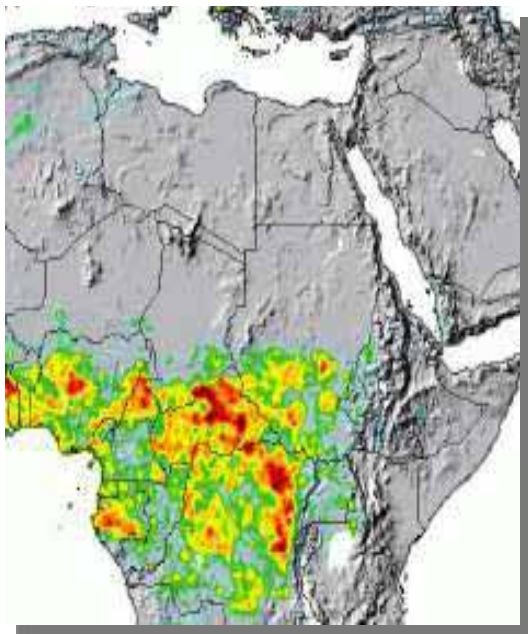


Countries with only a GLOBE agreement



Earth observation/predictive models:

- ***Integrates satellite observations, ground-based data and forecast models to monitor environmental changes and to improve response to natural disasters (floods earthquakes, landslides. earthquakes, etc)***
- ***Facilities currently in Central America and Africa, there are plans to expand to other regions***



Flood Forecasting in Africa



Training and Capacity Building



- ***Data and Models***
- ***Online Maps***
- ***Visualizations***
- ***Decision Support***
- ***Training***



SERVIR Applications

Provides information to decision makers related to:

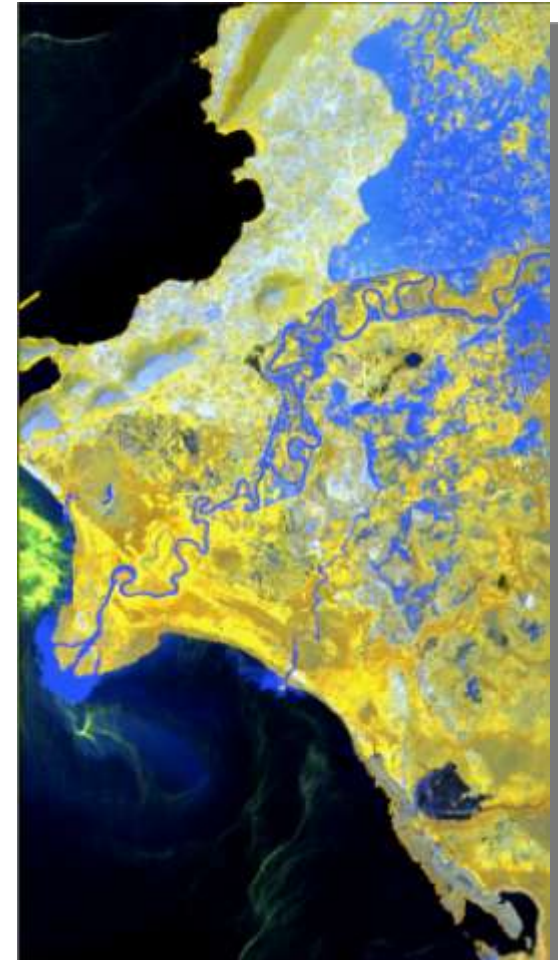
- **Disaster Analysis**
- **Environmental Monitoring**
- **Air Quality Assessment**
- **Climate Change and Biodiversity**
- **Short Term Weather Prediction**



***Mapping Landslide in
Guatemala
January 2009***



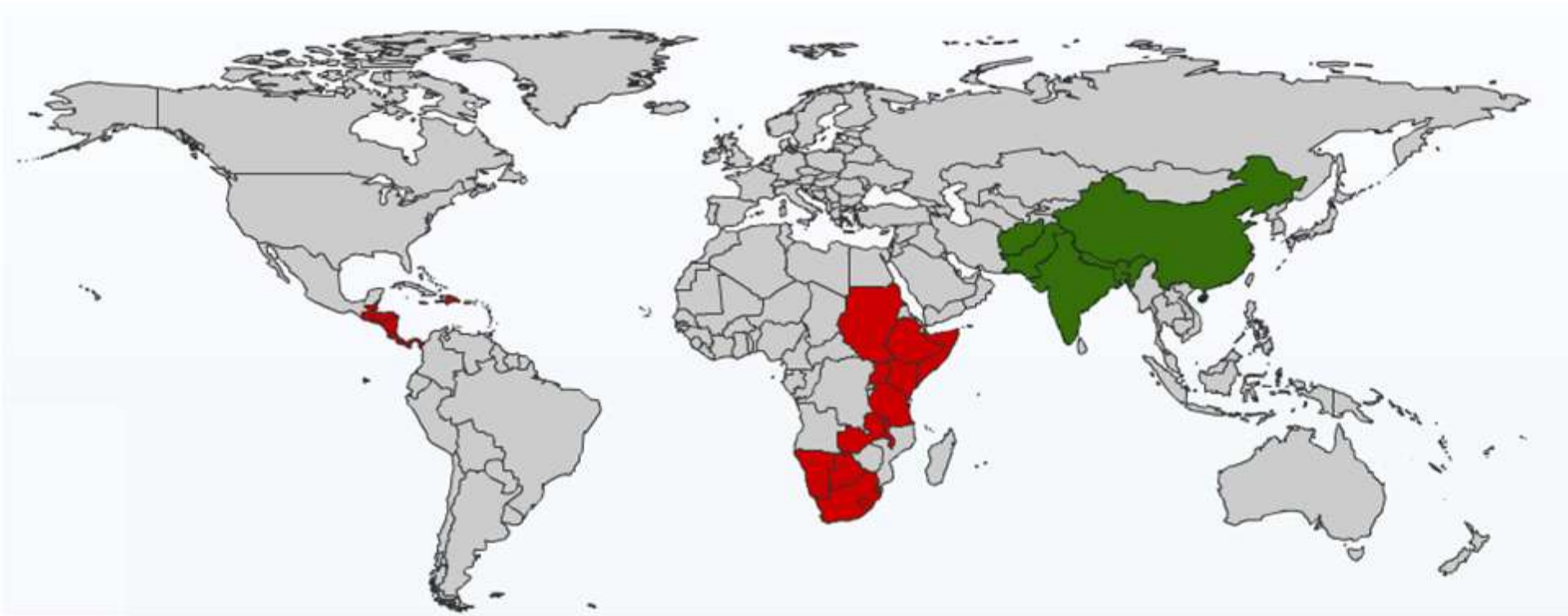
***Fires in Guatemala and Mexico
April 2009***



***Flooding in Kenya
November 2008***

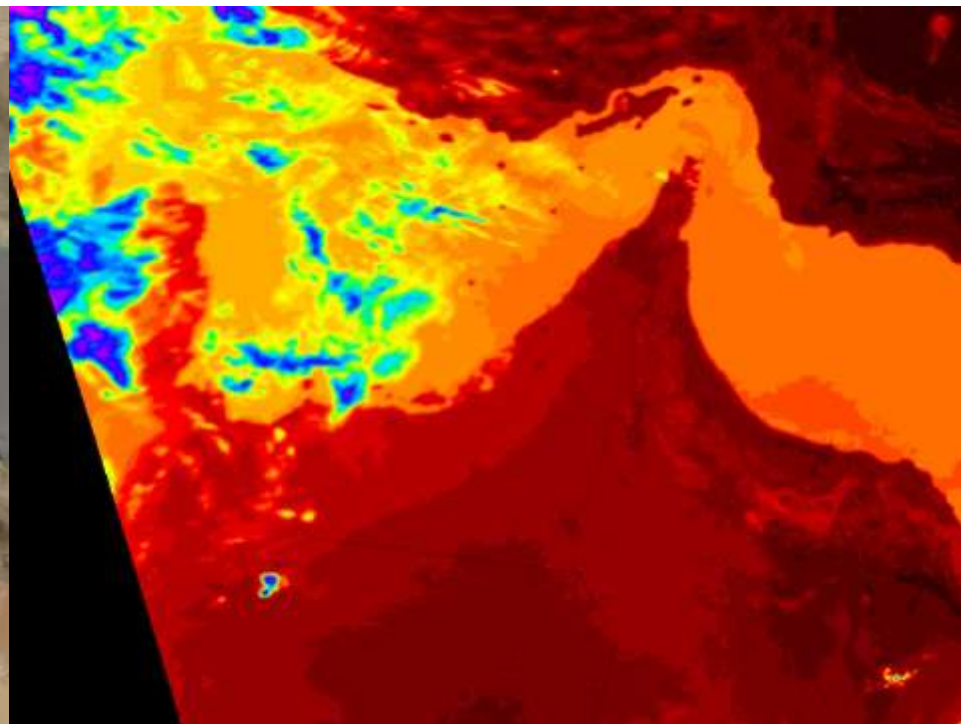
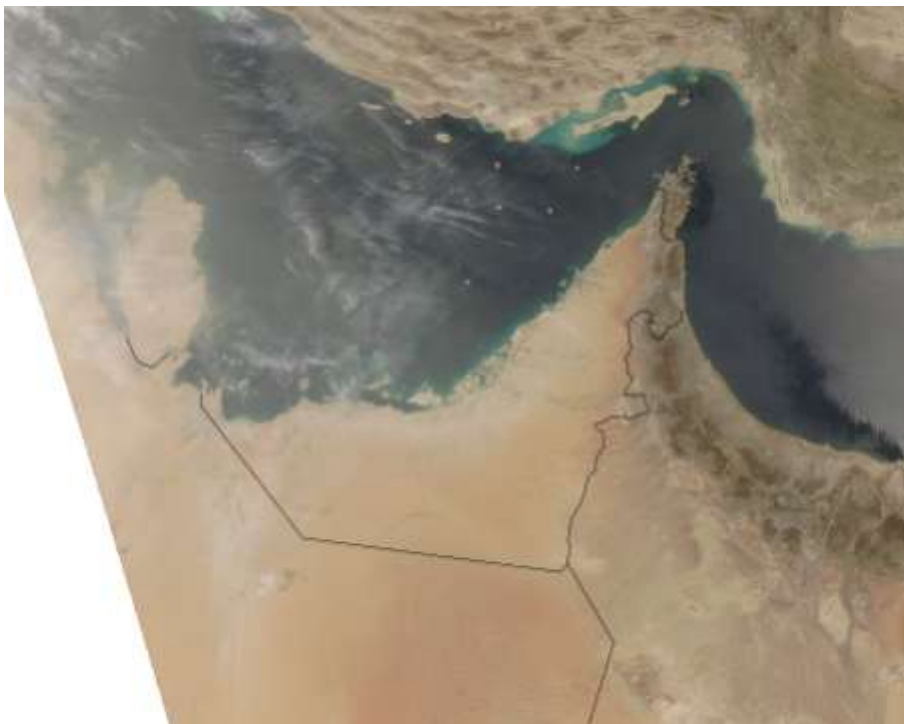


SERVIR – Current and Future





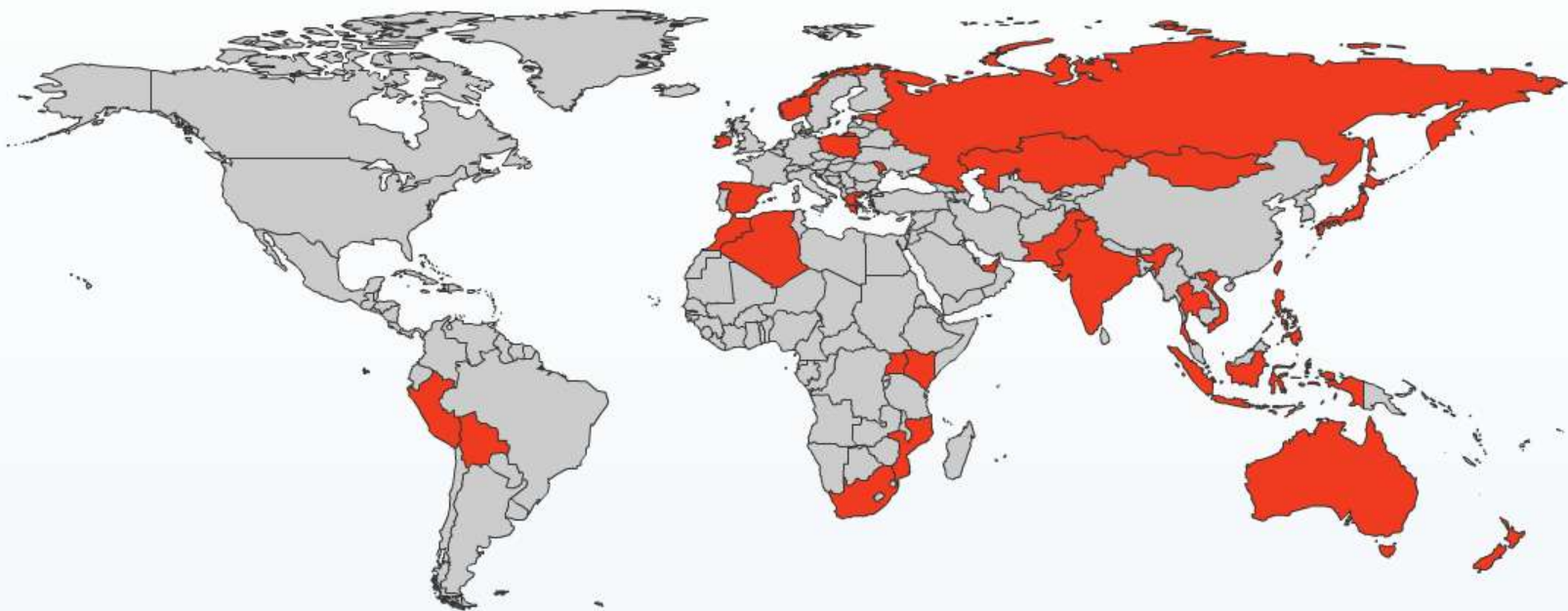
Aerosol Robotic Network (AERONET)



These images, in true color and showing sea surface temperature, were taken as part of a joint project between NASA and the United Arab Emirates Department of Water Resources Studies.



Aeronet Agreements





Challenges and Issues

- **Lack of NASA counterparts in many nations that under consideration**
- **“Learning curve” associated with initial cooperation with NASA**
 - Assess potential partner interest, capacity and funding
 - Raising unrealistic expectations
- **Traditional guidelines for international cooperation may need modification**
 - NGO involvement
 - Capacity building
- **Commitment of NASA human resources**
 - Development of new partnerships (international and within USG) is labor intensive



Next Steps

- **Continued interagency consultations**
- **Refinement of NASA priorities for potential cooperation**
 - NASA interests and resources
 - Potential partner expressions of interest
- **Continued engagement with non-traditional partners**
 - Participation in regional conferences, workshops and meetings
- **Seek to indentify specific opportunities for cooperation**
 - In some cases, agree on a Joint Statement of Intent
 - Establish necessary agreements for specific projects
- **Periodic assessment of progress**



Summary

- **International cooperation contributes significantly to NASA's mission and to national goals, and to national objectives of partner countries**
- **Strong Administration interest in enhanced international involvement in NASA's activities**
 - Cooperation with non-traditional partners is encouraged across the board
 - Additional emphasis on Muslim majority nations
- **Modest cooperation by NASA standards may have very positive implications for smaller nations and foreign policy benefits for the USG**
- **Potential non-traditional partners that NASA has engaged to date have expressed significant interest in an opportunity to work with NASA**